

Capsicum annuum L. 'Black Pearl'

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Considerable diversity exists in *Capsicum* L. germplasm for fruit and leaf shape, size and color, as well as plant habit. This morphological diversity, together with diverse ripe fruit color and varying hues of green to purple and variegated foliar pigmentation, affords myriad opportunities to develop unique cultivars for ornamental applications. When introduced to Europe in the 15th century, peppers were held in higher esteem as an ornamental plant than as a food source. Ornamental peppers as a potted or bedding plant and a florist crop are still popular today in Europe and are gaining in popularity in the United States (Armitage and Hamilton, 1987; Bosland, 1999). Ornamental peppers were long known as Christmas peppers in the floriculture industry and were limited to pot plants (Hammer, 1980). Christmas peppers bearing brightly colored fruit were the most popular Christmas gift plant until about the 1960s, at which time the poinsettia industry began to promote and introduce new, improved cultivars that have made poinsettia the number one Christmas gift plant (Stommel and Bosland, 2005).

Attributes of ornamental pepper include easy seed propagation, a relatively short cropping time, heat and drought tolerance, and excellent keeping quality (Stommel and Bosland, 2005). These attributes, together with the morphological diversity available in *Capsicum*, also make ornamental peppers ideal for use as bedding plants because they offer vibrant fruit and foliage colors through the summer and fall seasons. Ornamental peppers have become a profitable crop for greenhouse pot plant and transplant production and an innovative way for small farmers to produce a high-value alternative crop.

A growing demand exists for dark purple to black pigmented landscape and garden plants (Armitage, 2002). Included among these are black pansies (*Viola tricolor* L.), cannas (*Canna* sp. L.), coleus (*Coleus* sp. Lour.), alum-root (*Heuchera* L.), pearl millet (*Pennisetum glaucum* Rich.), sweet potato vine (*Ipomoea batatas* Lam.), taro (*Colocasia* sp. Schott), and others. Many of these species have limited seasonal interest and lack wide adaptability. Ornamental peppers produce colorful fruit in addition to variable foliage color and provide an attractive display into the fall season. They

rival chrysanthemum (*Dendranthema grandiflora* Tzvelev.) for vivid fall color as a border plant. In mixed plantings, the dark foliage is a welcome accompaniment to species bearing red, orange, or white to pale-colored flowers. Purple to black pigmentation is attributed to anthocyanins. In pepper fruit, anthocyanins accumulate in variable concentrations and in varying degrees of transience during maturation (Deshpande, 1933; Peterson, 1959). When present in other plant organs, however, purple pigmentation is normally stable through plant development.

The U.S. Department of Agriculture–Agricultural Research Service announces the release of a new pepper (*Capsicum annuum* L.) cultivar named 'Black Pearl'. 'Black Pearl' is intended for ornamental applications and affords growers a new crop to add to their bedding and landscape plant assortment. The vibrant fruit and foliage colors of this new cultivar add interest to the summer and fall garden.

Origin

'Black Pearl' is a true-breeding F_8 selection derived from an initial cross between a segregant identified in a population of the open-pollinated heirloom pepper cultivar Royal Black and a selection designated '86 Arboretum-1' that was introduced by Dr. Thomas Barksdale to the Beltsville *Capsicum* genebank from a 1986 display garden at the U.S. National Arboretum. 'Royal Black' was typified in our observation plots as a bushy plant with variegated green, white, and purple foliage. A unique segregant denoted 94C27 with non-variegated purple foliage was identified in the 'Royal Black' population and used as the female parent in the cross with '86 Arboretum-1'. Line 94C27 produced solitary pendant Tabasco type pods that matured from purple to red. '86 Arboretum-1' was a small compact plant with green foliage and clusters of small round red-pigmented fruit.

'Black Pearl' combines anthocyanin-pigmented foliage from 94C27 and upright-oriented clustered small round fruit from '86 Arboretum-1'. Selection in early generations focused on identification of individuals with purple-pigmented foliage that produced clusters of upright-oriented fruit. Successive selection for increased intensity of foliar anthocyanin pigmentation resulted in black foliage progeny. A concurrent selection program was begun for fruit size, shape and number per cluster. Selection was also made for upright compact, yet vigorous plants that would perform well season-long under bed-

ding plant conditions (Fig. 1). Uniformity of the 'Black Pearl' phenotype was stabilized under controlled pollination conditions prior to release at the eighth generation.

'Black Pearl' was trialed under field conditions in Elburn, Illinois (heat zone 5) [American Horticultural Society (AHS), 1997], Beltsville, Md. (heat zone 7), and Apollo Beach, Fla. (heat zone 10). In these trials, growers noted the plants striking black foliage that contrasted well with the brightly colored upright clustered fruit. 'Black Pearl' was subsequently trialed nationally in the All-America Selections (AAS) trial grounds by a network of independent judges who determined garden performance. 'Black Pearl' was designated a 2006 AAS award winner after completion of national trials in 2004. 'Black Pearl' is a release made available from a cooperative research and development agreement with Pan American Seed Company (Elburn, Illinois) to develop new pepper germplasm with novel fruit, foliage, and plant growth habit.

Description

'Black Pearl' is a diploid ($2n = 2x = 24$) herbaceous annual. 'Black Pearl' has proven uniform for these morphological characteristics in multiple trials during latter stages of cultivar development. AAS national trials conducted over multiple locations in 2004 supported these observations. Data reported here were collected from 2004 trials in Beltsville, Maryland and describes relevant ornamental attributes. Roots are fibrous. Leaves and stems are glabrous and glossy. Leaves are simple, entire, lanceolate, apiculate at the tip, and symmetrical. At maturity, leaves average 8.2 cm in length (range: 7.4–11.0 cm) and 3.5 cm in width (range: 2.9–4.5 cm). Adaxial and abaxial foliage surface is black (202A) [Royal Horticultural Society (RHS), 1966]. Plant habit is upright and growth is fasciculate with branches ending in a fruit cluster. Plants average 45 cm in diameter (range: 44–47 cm) and 31 cm in height (range: 29–34 cm) (80 days post-transplanting).

Flowers are self-compatible, hermaphroditic, pentamerous and hypogynous. Flowers average 2.2 cm in diameter (range: 2.0–2.4 cm) and have purple (77A) petals. Flower styles, filaments and anthers exhibit slightly darker purple (79A) pigmentation in comparison to petals. Fruit are produced in upright clusters of six to eight per cluster. Immature fruit are black (202A) and mature to red (46A). Fruit are round and average 1.6 cm in diameter (range: 1.3–1.7 cm).

'Black Pearl' produces a flush of full-size black fruit in about 60 d from transplanting and a flush of mature red fruit in approximately 80 days after transplanting under good growing conditions (see culture section). Additional fruit will continue to develop and ripen over a subsequent four- to six-week period. Fruit are extremely pungent. 'Black Pearl' is intended for ornamental applications and so Scoville pungency units were not determined. Although edible, ornamental peppers are typically very pungent and are grown for their unusual pod

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shapes or for their dense foliage and colorful fruit (Bosland and Votava, 1999).

Culture

'Black Pearl' has been trialed extensively

Fig. 1. 'Black Pearl' pepper.

for use as a bedding plant where its compact growth habit, black foliage, and brightly colored erect fruit provide an attractive ornamental display. Limited evaluations suggest that this cultivar is equally well suited for pot culture under high light conditions. Tests in controlled environments indicate that foliar pigmentation is reduced under short day, low

light conditions (data not shown). 'Black Pearl' does not require pinching or application of growth regulators to maintain its growth habit. Similar to peppers grown for culinary use, 'Black Pearl' is a warm season crop requiring minimum daytime temperatures of 18 to 21 °C. The base growing-degree day temperature for pepper is 18 °C. Optimal growth is achieved



at higher temperatures up to 32 °C. Plants grow poorly in the 5 to 15 °C range and are frost susceptible (Bosland, 1999). Plants are best established from transplants produced in a warm greenhouse. Typical of most peppers, seedling emergence occurs in 10 to 12 d at 21 to 24 °C and is markedly delayed at reduced temperatures (Love, 1987). Plants suitable for transplanting (15 to 20 cm tall) are ready in 6 weeks from seeding. Plants prefer a well-drained loam or sandy loam soil with some organic matter and a pH range of 7.0 to 8.5. Satisfactory drainage reduces the incidence of infection by soilborne diseases such as phytophthora root rot.

Availability

Seed of 'Black Pearl' is available from Pan American Seed Co., 622 Town Road, West

Chicago, IL 60185. Plant Variety Protection for 'Black Pearl' has been requested. A voucher seed sample of this release has been submitted to the USDA, AMS, Plant Variety Protection Office and will be deposited in the National Plant Germplasm System. It is requested that appropriate recognition be made if this germplasm contributes to the development of a new breeding line or cultivar.

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